National Institute of Environmental Health Sciences

Why analyze mental models of local climate change? A case from southern Mozambique

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Abstract:

People construct mental models of local climate change based on their observations and experiences of past climate events and changes. These mental models offer critical insight into locally important factors that trigger responses to new climate conditions and can be used to ground-truth regional climate models. In this paper, the authors explore mental models of changes to local climate patterns and climate-associated environmental changes over the past 45 years (1963-2008) in two rural communities in Matutuine District, Mozambique. Interview results are compared to data from a regional weather station. Residents discuss temperature increases, short-term and long-term precipitation changes, and altered seasonal timing. Measurable climate change in this region includes increasing temperatures and more erratic rainfall leading to drought and altered season timing. The climate-associated environmental changes residents observed draw attention to links between local livelihood practices and climate, as well as emphasize changes that would not necessarily appear in regional climate models. Such changes include reduced crop and wild fruit production, fewer cattle, variable forest size, increased wildfires and elephant conflict, drying up of water sources, poor health, and cultural change. Differences between adjacent communities highlight the potential interaction of landscape and vegetation variability, gender, and livelihoods in observations and experiences of climate change and demonstrate how mental models can provide insight into local ecological patterns and processes.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Public

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Extreme Weather Event, Food/Water Security, Food/Water Security, Precipitation, Temperature

Extreme Weather Event: Drought, Wildfires

Food/Water Security: Agricultural Productivity, Food Access/Distribution, Livestock Productivity

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

Rural, Other Geographical Feature

Other Geographical Feature : Forests; Grassland

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Mozambique

Health Impact: ☑

specification of health effect or disease related to climate change exposure

General Health Impact

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status, Workers

Other Vulnerable Population: Women

Resource Type: ☑

format or standard characteristic of resource

Research Article, Research Article

Timescale: ☑

time period studied

Time Scale Unspecified